MERCURY AND AIR TOXIC ELEMENT IMPACTS OF COAL COMBUSTION BY-PRODUCT DISPOSAL AND UTILIZATION

Quarterly Technical Report

(For the period April 1 through June 30, 2006)

Prepared for:

AAD Document Control

U.S. Department of Energy
National Energy Technology Laboratory
626 Cochrans Mill Road, MS 921-107
PO Box 10940
Pittsburgh, PA 15236-0940

Cooperative Agreement No. DE-FC26-03NT41727
Contracting Officer's Representative: Lynn Brickett

Prepared by:

Debra F. Pflughoeft-Hassett

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

July 2006

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ABSTRACT

This quarterly report summarizes the efforts and accomplishments related to investigations of releases of mercury and other air toxic elements from coal combustion by-products (CCBs). This report focuses on laboratory efforts related to leaching, pH measurements, long-term ambient-temperature mercury release experiments, and microbiologically mediated release experiments. Energy & Environmental Research Center (EERC) participation in a Department of Energy (DOE) National Energy Technology Laboratory (NETL) informal interlaboratory comparative study of leaching procedures commonly applied to CCBs was completed. A fourth batch of long-term ambient-temperature mercury release experiments was initiated. Releases are continuing on select samples beyond this experiment. A microbiologically mediated experiment was completed. The draft final report is in preparation.

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LIST OF ACRONYMS

AA	atomic absorption
AF	atomic fluorescence
CCB	coal combustion by-product
DOE	U.S. Department of Energy
EERC	Energy & Environmental Research Center
FGD	flue gas desulfurization
LTL	long-term leaching
NETL	National Energy Technology Laboratory
OFS	orange fluffy stuff
PRB	Powder River Basin
SDA	spray dryer absorber
SGLP	synthetic groundwater leaching procedure

MERCURY AND AIR TOXIC ELEMENT IMPACTS OF COAL COMBUSTION BY-PRODUCT DISPOSAL AND UTILIZATION

EXECUTIVE SUMMARY

This quarterly report summarizes the efforts and accomplishments related to investigations of releases of mercury and other air toxic elements from coal combustion by-products (CCBs). This report focuses on laboratory efforts related to leaching, pH measurements, long-term ambient-temperature mercury release experiments, and microbiologically mediated release experiments.

The Energy & Environmental Research Center participation in a U.S. Department of Energy National Energy Technology Laboratory informal interlaboratory comparative study of leaching procedures commonly applied to CCBs was completed. A 24-hour pH measurement was performed on samples. A fourth batch of long-term ambient-temperature mercury release experiments was initiated. Releases are continuing on select samples beyond this experiment to establish a trend. A microbiologically mediated experiment was completed on four eastern bituminous fly ash samples.

The draft final report is in preparation.

MERCURY AND AIR TOXIC ELEMENT IMPACTS OF COAL COMBUSTION BY-PRODUCT DISPOSAL AND UTILIZATION

INTRODUCTION

This effort focuses on the evaluation of coal combustion by-products (CCBs) for their potential to release mercury and other air toxic elements under different controlled laboratory conditions and will investigate the release of these same air toxic elements in select disposal and utilization field settings to understand the impact of various emission control technologies. Information will be collected, evaluated, and interpreted together with past Energy & Environmental Research Center (EERC) and similar data from other studies. Results will be used to determine if mercury release from CCBs, both as currently produced and as produced with mercury and other emission controls in place, will potentially impact CCB management practices. The project will provide data on the environmental acceptability of CCBs expected to be produced in systems with emission controls for typical disposal and utilization scenarios. The project will develop baseline information on the release mechanisms of select elements in both conventional and modified or experimental CCBs. The modified or experimental CCBs will represent those from systems that have improved emission controls. Controlling these emissions has a high potential to change the chemical characteristics and environmental performance of CCBs. Development of reliable methods to determine the release of mercury from CCBs will provide a means of evaluating the environmental risk associated with CCB management practices. Using appropriate methods to develop data about currently produced CCBs and those produced under experimental or simulated conditions will provide a baseline for the CCB industry to understand the impact of various emission control technologies.

EXPERIMENTAL

Literature Search

Researchers continued to collect publications related to mercury, air toxic elements, and CCBs. Citations and abstracts were assembled and added to the Mercury and Air Toxic Element document database located at www.undeerc.org/carrc/mercury. This database is password-protected and only available to project researchers and sponsors.

Analytical Methods Selection

As noted previously, the original scope of the task was expanded to include participation in a U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) informal interlaboratory comparative study of leaching procedures commonly applied to CCBs. Work on this subtask continued with leaching and associated analysis of leachates.

Sample Identification and Selection

This task is complete.

Chemical and Physical Characterization

A 24-hour pH measurement was performed on samples.

Laboratory Evaluation of Air Toxic Element Release

Leaching

Leaching using the synthetic groundwater leaching procedure (SGLP) and 30- and 60-day long-term leaching (LTL) was performed to fill in data gaps.

Vapor Transport

The fourth batch of long-term ambient-temperature mercury release experiments was initiated. All samples were set up in duplicate (see Table 1). The 7-day releases from all of the samples were measured. Additional mercury releases were measured from the flue gas desulfurization (FGD) gypsum samples.

Table 1. Fourth Batch Long-Term Ambient-Temperature Mercury Release Experiment Sample Summary

ID No.	Sample Type	Coal Type	Mercury Control	Total Hg, µg/g
04-082	FGD gypsum	Eastern bituminous	No	0.043
04-083	FGD gypsum	Eastern bituminous	No	0.103
05-013	Fly ash	Fort Union lignite	Yes	40.0
05-023	Fly ash	Fort Union lignite	Yes	12.7
05-024	Fly ash	Fort Union lignite	Yes	35.9
05-025	Fly ash	Fort Union lignite	Yes	12.6
05-038	Fly ash	Fort Union lignite	No	0.104
05-040	Fly ash	Fort Union lignite	Yes	44.5
06-001	Fly ash	Fort Union lignite	Yes	NT[1]

[1] Not tested.

Mercury releases were measured from samples continued from previous batches of experiments approximately every 45 days.

Mercury thermal desorption curves were generated for eight samples by atomic absorption (AA). Spiking experiments were conducted using mercuric chloride on some samples as well as on quartz sand.

Microbiological Release

The microbiological release experiment initiated last quarter was completed on the evaluation of four samples (Table 2) under aerobic and anaerobic glucose-fed conditions in triplicate. The four samples were selected based on low alkaline capacity and mercury content. The method used was similar to the previous two experiments, with minor modifications. A 20-g

aliquot of sample, 150-mL of buffer solution, and a 100-µL aliquot of a sulfate-reducing bacteria culture were used for evaluation. Sulfuric acid addition was not required. The ratio of sample-to-buffer solution was maintained as in previous experiments. The bacteria were added after the addition of the buffer to allow the systems to neutralize. The system was stirred intermittently over the duration of the experiment. Vapor-phase organomercury released from the system was captured in tubes containing Supelco Carbotrap™, and elemental mercury releases were captured on gold-coated quartz traps.

Table 2. Microbiological Release Experiment Sample Summary

ID No.	Sample Type	Coal Type	Mercury Control	Total Hg, µg/g
03-006	Fly ash	Eastern bituminous	No	0.194
03-007	Fly ash	Eastern bituminous	No	0.141
04-003	Fly ash	Eastern bituminous	No	0.685
05-018	Fly ash	Eastern bituminous	No	0.123

Upon completion of the experiment, evaluations included pH, Eh, and elemental and organomercury vapor releases. Vapor-phase elemental and organomercury releases were determined using atomic fluorescence (AF). The gold-coated quartz collection traps were desorbed for analysis by heating to approximately 500°C, and the mass of mercury released was determined using AF. The Supelco Carbotrap™ collection traps were analyzed for total mercury by heating the trap to approximately 300°C, passing the released organomercury through a tube held at about 800°C, and collecting the mercury on a gold-coated quartz trap, which was analyzed as described above.

Additional evaluations will include a determination of solution concentrations of elemental and organomercury and solution total trace-element concentrations

Four fly ash high-alkaline-capacity samples were chosen for a method for alkaline component removal last quarter. Two liters of water was added to 500 grams of each sample and placed on a rotator at 350 rpm. Each day, the solid is allowed to settle, the liquid is drained off, and the container with the fly ash sample is filled with water again. Two of the samples were moved to columns this quarter.

Field Investigation

It was determined that the second field investigation would be performed in the laboratory using mixtures of FGD material and soil. Material preparations were initiated.

Data Reduction and Interpretation

Data assembly continued as laboratory results became available during the quarter.

Technology Transfer

David Hassett presented “HOT TOPIC: Mercury and Its Impact on CCBs” at the Coal Ash Professionals Training Course, held April 19–21, 2006, in Memphis, Tennessee.

An article prepared by Debra Pflughoeft-Hassett, David Hassett, Loreal Heebink, and Tera Buckley entitled “The Current State of Science Related to the Rerelease of Mercury from Coal Combustion By-Products” was published in the Winter/Spring 2006 issue of Ash at Work.

During the quarter, project researchers were made aware of an effort in California to remove coal fly ash from a list of approved recycled materials based on the potential presence and release of mercury. Project researchers provided information about the behavior of mercury associated with fly ash based on data developed under this project. Following submission of this information, researchers were informed that a decision was made to continue to include coal fly ash on the state of California list of approved recycled materials.

Preparation of the draft final report began.

RESULTS AND DISCUSSION

Literature Search

This quarter, 15 documents were added to the Mercury and Air Toxic Element Database, which now contains 520 documents.

Analytical Methods Selection

EERC participation in a DOE NETL informal interlaboratory comparative study of leaching procedures commonly applied to CCBs was completed. Leachate concentrations will be available next quarter.

Sample Identification and Selection

This task is complete.

Chemical and Physical Characterization

Table 3 shows the initial pH (at 10–15 minutes) versus the 24-hour pH of the samples. It was recently noticed that the pH readings on some samples, particularly ones with significant concentrations of carbon, tended to drift over time. The longer hydration times were recently instituted on ash samples prior to reading the pH in order to obtain a more accurate pH. Additional experiments to determine what times are sufficient to obtain a stable pH reading are under way.

Table 3. pH Measurements

ID No.	Sample Type	Coal Type	Mercury Control	Initial pH	24-hour pH
02-003	Fly ash + additive	Eastern bituminous	Yes	4.19	4.76
02-006	Fly ash	PRB[a] subbituminous	Yes	10.99	10.95
02-007	Fly ash	Eastern bituminous	Yes	3.47	3.99
02-069	Fly ash + additive	Eastern bituminous	Yes	8.85	8.43
02-070	Fly ash	Eastern bituminous	No	9.98	8.50
02-071	Fly ash + additive	Eastern bituminous	Yes	9.26	8.63
02-072	Fly ash	Eastern bituminous	No	10.09	8.83
02-073	Fly ash	Eastern bituminous	No	12.18	12.44
02-074	Fly ash	Eastern bituminous	No	12.00	11.80
02-076	Fly ash + additive	Eastern bituminous	Yes	10.38	9.13
03-004	Fly ash	Eastern bituminous	No	4.54	7.08
03-005	Fly ash	Eastern bituminous	No	4.45	5.88
03-006	Fly ash	Eastern bituminous	No	4.82	6.78
03-007	Fly ash	Eastern bituminous	No	4.38	5.52
03-011	Fly ash	Eastern bituminous	Yes	10.82	9.65
03-013	Fly ash	Eastern bituminous	Yes	10.97	9.59
03-014	Fly ash	Eastern bituminous	Yes	10.00	8.69
03-016	Fly ash	Fort Union lignite	No	12.63	12.54
03-017	Fly ash + additive	Fort Union lignite	Yes	12.69	12.61
03-018	Fly ash + additive	Fort Union lignite	Yes	12.58	12.38
03-019	Fly ash + additive	Fort Union lignite	Yes	11.92	11.86
03-060	Fly ash + additive	PRB subbituminous	Yes	11.31	11.90
03-061	Fly ash	PRB subbituminous	No	11.91	12.56
03-062	Fly ash + additive	Fort Union lignite	Yes	12.67	12.60
03-063	Fly ash	Eastern bituminous	No	10.98	11.00
03-065	FGD gypsum	Eastern bituminous	No	8.07	7.75
03-067	FGD slurry	Eastern bituminous	No	8.95	8.75
03-079	Fly ash	Fort Union lignite	No	11.81	11.62
03-080	Fly ash	Fort Union lignite	No	11.72	11.68
03-081	Fly ash	Fort Union lignite	No	11.20	10.50
03-082	FGD filtercake	Eastern bituminous	No	8.18	7.85
03-083	Fly ash	Eastern bituminous	No	4.75	9.00
03-084	Fixated FGD	Eastern bituminous	No	11.57	11.03
03-085	Fly ash	Eastern bituminous	No	9.54	8.79
03-086	FGD filtercake	Eastern bituminous	No	7.81	7.70
03-087	Fixated FGD	Eastern bituminous	No	10.87	10.50
03-088	Fly ash	Eastern bituminous	No	10.72	11.15
03-089	FGD gypsum	Eastern bituminous	No	8.13	7.95
03-103	Lab-filtered FGD slurry liquor	Eastern bituminous	No	6.78	7.38

Continued . . .

Table 3. pH Measurements (continued)

ID No.	Sample Type	Coal Type	Mercury Control	Initial pH	24-Hour pH
03-104	Lab-filtered FGD filtercake liquor	Eastern bituminous	No	3.98	3.85
03-114	Lab-filtered FGD filtercake liquor	Eastern bituminous	No	6.99	7.51
04-003	Fly ash	Eastern bituminous	No	9.36	8.54
04-004	Fly ash	Eastern bituminous	No	9.89	8.92
04-006	Fly ash	Western bituminous	No	11.56	10.38
04-007	Fly ash	Western bituminous	No	12.74	12.65
04-029	Fly ash	PRB subbituminous	No	12.56	12.27
04-030	Fly ash + additive	Fort Union lignite	Yes	11.56	11.30
04-031	Fly ash + additive	Fort Union lignite	Yes	11.64	11.25
04-032	Fly ash + additive	Fort Union lignite	Yes	9.54	10.52
04-035	Fly ash	Fort Union lignite	No	12.77	12.74
04-036	Fly ash + additive	Fort Union lignite	Yes	12.79	12.77
04-037	Fly ash	Gulf Coast lignite/PRB subbituminous blend	No	11.95	11.46
04-038	Fly ash	Gulf Coast lignite/PRB subbituminous blend	No	11.90	11.51
04-039	Fly ash	Gulf Coast lignite/PRB subbituminous blend	No	11.70	11.33
04-040	Fly ash	Gulf Coast lignite/PRB subbituminous blend	No	10.99	10.98
04-042	Fly ash	Gulf Coast lignite	No	11.87	11.31
04-043	Fly ash	Gulf Coast lignite	No	11.82	11.28
04-044	Fly ash	Gulf Coast lignite	No	11.76	11.27
04-054	Fly ash + additive	Eastern bituminous	Yes	8.48	9.20
04-067	Fly ash + additive	PRB subbituminous	Yes	12.70	12.60
04-082	FGD gypsum	Eastern bituminous	No	8.19	7.72
04-083	FGD gypsum	Eastern bituminous	No	8.19	7.80
05-001	Fly ash	Fort Union lignite	No	12.50	12.51
05-002	Fly ash + FGD-SDA[b]	Fort Union lignite	No	12.55	12.50
05-003	Fly ash + additive	Fort Union lignite	Yes	12.39	12.29
05-004	Fly ash + FGD-SDA + additive	Fort Union lignite	Yes	12.51	12.54
05-005	Fly ash	Fort Union lignite	No	11.77	11.57
05-008	OFS[c] solids	Eastern bituminous	No	8.82	8.56
05-009	FGD gypsum	Eastern bituminous	No	8.68	7.88

Continued . . .

Table 3. pH Measurements (continued)

ID No.	Sample Type	Coal Type	Mercury Control	Initial pH	24-Hour pH
05-010	Fly ash	Eastern bituminous	No	11.91	11.72
05-011	FGD gypsum filtrate	Eastern bituminous	No	5.44	5.25
05-013	Fly ash + additive	Fort Union lignite	Yes	9.00	11.33
05-017	Fly ash + additive	Fort Union lignite	Yes	12.04	11.77
05-018	Fly ash	Eastern bituminous	No	7.42	8.49
05-019	FGD filtercake	Eastern bituminous	No	7.90	7.88
05-020	Fixated FGD	Eastern bituminous	No	12.10	12.43
05-022	FGD filtrate	Eastern bituminous	No	7.26	8.13
05-023	Fly ash + additive	Fort Union lignite	Yes	11.35	12.00
05-024	Fly ash + additive	Fort Union lignite	Yes	7.43	11.41
05-025	Fly ash + additive	Fort Union lignite	Yes	11.53	11.99
05-028	OFS centrate	Eastern bituminous	No	7.95	7.93
05-031	Lab-filtered OFS solids liquor	Eastern bituminous	No	8.37	8.21
05-032	Lab-filtered FGD filtercake liquor	Eastern bituminous	No	6.75	7.47
05-038	Fly ash	Fort Union lignite	No	11.67	11.73
05-040	Fly ash + additive	Fort Union lignite	Yes	7.03	11.36
06-001	Fly ash + additive	Fort Union lignite	Yes	7.20	11.37
99-188	Fly ash + FGD-SDA	PRB subbituminous	No	12.41	12.22

[a] Powder River Basin.
[b] Spray dryer absorber ash.
[c] Orange fluffy stuff.

Laboratory Evaluation of Air Toxic Element Release

Leaching

Leaching was performed using SGLP and 30- and 60-day LTL. Results will be available next quarter.

Vapor Transport

Results of the initial 7-day period in the fourth batch of long-term ambient-temperature mercury release experiments are reported in pg/g/day in Table 4. Both FGD gypsum samples showed releases high enough to require mercury release measurement more frequently than every 90 days, as will be done with the fly ash samples.

Mercury release measurements have continued for several samples past the termination of the batch in which these samples were originally included. These measurements have been performed approximately every 45 days and are reported in Table 5 along with a 45-day measurement for Sample 04-083 from the fourth batch.

Table 4. Fourth Batch Ambient-Temperature Mercury Release for Initial 7-day Period, pg/g/day

ID No.	Sample Type	Coal Type	Mercury Control	Bottle 1	Bottle 2
04-082	FGD gypsum	Eastern bituminous	No	9.85	11.2
04-083	FGD gypsum	Eastern bituminous	No	0.401	0.450
05-013	Fly ash	Fort Union lignite	Yes	0.00434	0.00176
05-023	Fly ash	Fort Union lignite	Yes	0.00152	0.00213
05-024	Fly ash	Fort Union lignite	Yes	0.00136	0.00151
05-025	Fly ash	Fort Union lignite	Yes	0.00106	0.00139
05-038	Fly ash	Fort Union lignite	No	0.00179	0.00107
05-040	Fly ash	Fort Union lignite	Yes	0.00060	0.00063
06-001	Fly ash	Fort Union lignite	Yes	0.00094	0.00158

Table 5. Ambient-Temperature Mercury Release in Fourth Batch Sample 04-083 and in Continuation Samples, pg/g/day

ID No.	Sample Type	Coal Type	Mercury Control	Batch	Bottle 1	Bottle 2	45-Day Period
03-065	FGD gypsum	Eastern bituminous	No	3	0.00947	0.0118	Fifth
03-065	FGD gypsum	Eastern bituminous	No	3	0.00517	0.00345	Sixth
03-082	FGD filtercake	Eastern bituminous	No	2	2.34	1.53	Twelfth
03-082	FGD filtercake	Eastern bituminous	No	2	2.50	2.02	Thirteenth
03-082a	FGD filtercake	Eastern bituminous	No	3	4.13	3.56	Seventh
03-082a	FGD filtercake	Eastern bituminous	No	3	4.49	4.40	Eighth
03-082b	FGD filtercake	Eastern bituminous	No	3	5.55	5.89	Seventh
03-082b	FGD filtercake	Eastern bituminous	No	3	7.58	7.22	Eighth
04-083	FGD gypsum	Eastern bituminous	No	4	0.401	0.450	First
05-009	FGD gypsum	Eastern bituminous	No	3	0.00493	0.0211	Sixth
05-009	FGD gypsum	Eastern bituminous	No	3	0.00251	0.00332	Seventh

Measurements of mercury release from Sample 04-082 were measured every 3–5 days following the initial 7-day measurement because of the high amount of mercury. The releases from this quarter are reported in pg/g/day in Table 6.

Table 6. Ambient-Temperature Mercury Release in Fourth Batch Sample 04-082, pg/g/day

Period	Number of Days	Bottle 1	Bottle 2
1	7	9.85	11.2
2	7	26.3	25.6
3	7	34.9	36.2
4	5	36.8	38.1
5	7	41.7	42.3
6	3	43.3	44.7
7	5	42.7	45.9
8	5	42.9	42.2
9	4	30.8	32.1
10	5	41.6	42.1

Mercury thermal desorption curves were generated for nine samples by AA (Table 7), primarily from the most recently obtained sample set. Spiking experiments were conducted using mercuric chloride on a fly ash sample obtained under baseline conditions as well as on quartz sand.

Table 7. CCB Samples Tested for Mercury Thermal Desorption

ID No.	Sample Type	Coal Type	Mercury Control	Runs
05-005	Fly ash	Fort Union lignite	No	3
05-013	Fly ash	Fort Union lignite	Yes	3
05-017	Fly ash	Fort Union lignite	Yes	3
05-023	Fly ash	Fort Union lignite	Yes	10
05-024	Fly ash	Fort Union lignite	Yes	3
05-025	Fly ash	Fort Union lignite	Yes	3
05-038	Fly ash	Fort Union lignite	No	2
05-040	Fly ash	Fort Union lignite	Yes	2
06-001	Fly ash	Fort Union lignite	Yes	2

Microbiological Release

The microbiological release experiment initiated last quarter on the evaluation of the four samples listed in Table 2 under aerobic and anaerobic glucose-fed conditions in triplicate was completed. Last quarter, a 4-day initial elemental mercury release measurement for the samples, which was the period between sample and buffer addition and bacteria addition to the flask, was reported. Possible fungal growth was noted within three days of bacteria addition. A moldy or musty odor was noted in the air over the aerobic side of the experimental setup 10 days after bacteria addition.

Other analyses were performed at the end of the month-long experiment as are reported in Tables 8–9. Prior to preparations necessary for sample analyses, the condition of each flask

sample was noted after settling of the solids. All anaerobic sample flasks contained a clear liquid and had no odor. All aerobic sample flasks contained a dark gray to black, opaque liquid. All but one of the aerobic sample flasks (Sample 04-003) had an odor that was described as slightly musty to a pungent baby formula-type odor. Many of the aerobic sample flasks had varying amounts of small white specks or a film that were possibly fungus. One of the aerobic flasks for Sample 03-006 had a definite fungus or mold patch on the top of the liquid. The liquid samples from the aerobic side of the experiment required the use of a centrifuge to separate the liquid and solid enough to filter through a 0.45-µm filter. Eh and pH measurements of all filtered liquid samples are reported in Table 8.

Table 8. Microbiological Experiment Eh and pH Results

Anaerobic			Aerobic		
ID No.	Eh, mV	pH	ID No.	Eh, mV	pH
03-006	209.0	6.98	03-006	98.3	8.87
03-006	177.3	7.00	03-006	196	8.78
03-006	167.7	6.87	03-006	83.8	8.70
03-007	207.5	6.71	03-007	126	8.64
03-007	178.3	6.64	03-007	195	8.72
03-007	163.5	6.69	03-007	103	8.65
04-003	95.3	6.95	04-003	156	8.77
04-003	51.4	8.49	04-003	119	8.60
04-003	62.3	8.49	04-003	98.5	8.61
05-018	14.2	7.91	05-018	149	8.60
05-018	11.5	7.86	05-018	97.0	8.63
05-018	2.4	8.06	05-018	116	8.54

Table 9 reports the elemental and organomercury vapor-phase release results in pg/g/day. The samples on the aerobic side released more vapor-phase mercury with one exception.

Table 9. Vapor-Phase Mercury Release Results, pg/g/day

Anaerobic			Aerobic		
ID No.	Elemental Mercury	Organomercury	ID No.	Elemental Mercury	Organomercury
03-006	0.130	0.164	03-006	17.9	1.91
03-006	0.255	0.0947	03-006	5.36	0.524
03-006	0.178	0.0746	03-006	6.08	0.752
03-007	0.253	0.0495	03-007	5.89	0.206
03-007	6.17	0.104	03-007	1.11	0.215
03-007	0.388	0.180	03-007	13.6	1.51
04-003	0.0676	0.0458	04-003	15.6	0.0352
04-003	0.249	0.0573	04-003	4.17	0.0847
04-003	0.285	0.0386	04-003	10.3	0.174
05-018	12.1	0.763	05-018	17.7	1.07
05-018	0.797	0.120	05-018	21.3	0.717
05-018	1.74	0.212	05-018	34.9	3.24

A method for alkaline component removal in high-alkaline-capacity samples continued. The pH of each of the four fly ash sample liquids was 13–14 at the start of the testing last quarter. At the end of this quarter, the pH values are in the 10–11 range. The samples in question are being leached with significant quantities of distilled water in an attempt to remove alkaline components. This is an ongoing experiment that will be reported on later.

Field Investigation

Materials were obtained for use in the laboratory-scale investigation of mercury release from FGD material/soil mixtures. A soil was obtained for this investigation.

Data Reduction and Interpretation

Data from all laboratory experiments continues to be reviewed, and where needed, laboratory experiments were repeated to check data that showed inconsistencies or too much deviation.

PLANS FOR NEXT QUARTER

During the next quarter, laboratory activities will be wrapped up. Analytical activities on samples generated from the release experiments will continue as samples are generated. The laboratory-scale field investigation will be performed.

The draft final report will be submitted to DOE and project sponsors. It is anticipated that a project closeout meeting will be scheduled for September or the project will be extended to the end of December so a presentation can be made at the DOE NETL Mercury Review meeting now scheduled for December 2006.